

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2004/051914

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 C08F10/00 C08F4/64 C08F10/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 C08F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, CHEM ABS Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|----------|---|-----------------------|
| Y        | BARINO, LUISA ET AL BARINO, LUISA ET AL:<br>"Steric equivalence between internal and external donors as polymerization stereoregulators: a molecular mechanics study Steric equivalence between internal and external donors as polymerization stereoregulators: a molecular mechanics study"<br>MACROMOLECULAR SYMPOSIA , 89(SYNTHETIC, STRUCTURAL AND INDUSTRIAL ASPECTS OF STEREOSELECTIVE POLYMERIZATION), 101-11, 1995, XP0008029111<br>the whole document | 1-10                  |
| Y        | GB 1 235 569 A (MONSANTO CO)<br>16 June 1971 (1971-06-16)<br>examples 1-3   | 1-10                  |
|          |   | -/-                   |

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

## \* Special categories of cited documents :

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- \*O\* document referring to an oral disclosure, use, exhibition or other means
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- \*&\* document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

1 December 2004

14/12/2004

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|----------|--|-----------------------|
| A        | US 5 356 848 A (BRUSSON JEAN M ET AL)<br>18 October 1994 (1994-10-18)<br>examples 20,52; tables I,II<br>-----  | 1-10                  |
| A        | BARINO, LUISA ET AL BARINO, LUISA ET AL:<br>"Modeling of isospecific Ti sites in MgCl <sub>2</sub><br>supported heterogeneous Ziegler-Natta<br>catalysts Modeling of isospecific Ti sites<br>in MgCl <sub>2</sub> supported heterogeneous<br>Ziegler-Natta catalysts"<br>MACROMOLECULAR THEORY AND SIMULATIONS ,<br>7(4), 407-419, 1998, XP0008029113<br>the whole document<br>----- | 1-10                  |
| A        | MASI, F. ET AL MASI, F. ET AL:<br>"Characterization of active sites in<br>Ti/Hf/MgCl <sub>2</sub> catalysts by chiral<br>reagents"<br>STUDIES IN SURFACE SCIENCE AND CATALYSIS ,<br>89(CATALYST DESIGN FOR TAILOR-MADE<br>POLYOLEFINS), 73-80, 1994, XP0008029109<br>tables 1-4<br>-----   | 1-10                  |
| A        | VIZZINI, JAMES ET AL VIZZINI, JAMES ET AL:<br>"Stereoselective polymerization of<br>.alpha.-olefins by heterogeneous chiral<br>Ziegler-Natta catalysts Stereoselective<br>polymerization of .alpha.-olefins by<br>heterogeneous chiral Ziegler-Natta<br>catalysts"<br>MACROMOLECULES , 25(1), 108-15, 1992,<br>XP0001189084<br>the whole document<br>-----                           | 1-10                  |
| A        | DATABASE CHEMABS 'Online!<br>CHEMICAL ABSTRACTS SERVICE, COLUMBUS,<br>OHIO, US;<br>ISHIHARA, TAKESHI ET AL: "Preparation of<br>catalyst components for polymerization<br>of olefins"<br>XP002274863<br>retrieved from STN<br>Database accession no. 1994:509864<br>abstract<br>& JP 06 049119 A (TONEN CORP, JAPAN)<br>22 February 1994 (1994-02-22)<br>-----                        | 1-10                  |
| A        | DATABASE CHEMABS 'Online!<br>CHEMICAL ABSTRACTS SERVICE, COLUMBUS,<br>OHIO, US;<br>LUU, MING CHUANG ET AL: "Catalysts for<br>the polymerization of alpha-olefins"<br>XP002274864<br>retrieved from STN<br>Database accession no. 1991:62989<br>abstract<br>-----   | 1-10                  |

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2004/051914

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|----------|---|-----------------------|
| A        | & JP 02 173105 A2 (FORMOSA PLASTICS CORP., TAIWAN) 4 July 1990 (1990-07-04)<br>-----<br>EP 0 171 200 A (TOA NENRYO KOGYO K. K., JAPAN) 12 February 1986 (1986-02-12)<br>page 23; example 14; table IV<br>page 27; example 28; table VI<br>-----   | 1-10                  |
| A        | EP 0 173 472 A (TOA NENRYO KOGYO K. K., JAPAN) 5 March 1986 (1986-03-05)<br>page 21; example 49<br>page 25; table VI<br>-----   | 1-10                  |
| A        | EP 0 208 524 A (TOA NENRYO KOGYO K. K., JAPAN) 14 January 1987 (1987-01-14)<br>page 23; example 56<br>page 27; example 56<br>-----  | 1-10                  |
| A        | XU, JUNTING ET AL XU, JUNTING ET AL:<br>"Influence of Electron Donors on the<br>Tacticity and the Composition Distribution<br>of Propylene -Butene Copolymers<br>Produced by Supported Ziegler-Natta<br>Catalysts Influence of Electron Donors on<br>the Tacticity and the Composition<br>Distribution of Propylene -Butene<br>Copolymers Produced by Supported"<br>MACROMOLECULES , 30(25), 7655-7660 CODEN:<br>MAMOBX; ISSN: 0024-9297 MACROMOLECULES ,<br>30(25), 7655-7660 CODEN: MAMOBX; ISSN:<br>0024-9297, 1997, XP0001189086<br>the whole document<br>----- | 1-11                  |
| A        | LORENZO, M. ORTEGA ET AL: "Creating<br>Chiral Surfaces for Enantioselective<br>Heterogeneous Catalysis: R,R-Tartaric Acid<br>on Cu(110)"<br>JOURNAL OF PHYSICAL CHEMISTRY B , 103(48),<br>10661-10669 CODEN: JPCBFK; ISSN:<br>1089-5647, 1999, XP0001188940<br>cited in the application<br>the whole document<br>-----  | 1-11                  |

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/EP2004/051914

| Patent document cited in search report |    | Publication date |  | Patent family member(s)  |  | Publication date   |
|--|----|------------------|--|--|--|--|
| GB 1235569                             | A  | 16-06-1971       |  | DE 1814287 A1<br>BE 696593 A<br>DE 1745099 A1<br>GB 1182651 A<br>GB 1233599 A<br>NL 6704784 A<br>US 3677911 A<br>US 3684739 A<br>US 3700710 A<br>US 3787383 A<br>US 3516978 A<br>US 3546083 A  |  | 14-08-1969<br>04-10-1967<br>14-05-1970<br>04-03-1970<br>26-05-1971<br>05-10-1967<br>18-07-1972<br>15-08-1972<br>24-10-1972<br>22-01-1974<br>23-06-1970<br>08-12-1970   |
| US 5356848                             | A  | 18-10-1994       |  | FR 2633298 A1<br>US 5264088 A<br>AT 96811 T<br>BR 8903067 A<br>CA 1340307 C<br>CN 1040376 A , B<br>DE 68910410 D1<br>DE 68910410 T2<br>EP 0351265 A1<br>ES 2048853 T3<br>JP 2051506 A<br>JP 2768982 B2<br>KR 178365 B1<br>MX 171373 B<br>US 5068014 A<br>MX 9203802 A1 |  | 29-12-1989<br>23-11-1993<br>15-11-1993<br>06-02-1990<br>05-01-1999<br>14-03-1990<br>09-12-1993<br>19-05-1994<br>17-01-1990<br>01-04-1994<br>21-02-1990<br>25-06-1998<br>15-05-1999<br>20-10-1993<br>26-11-1991<br>01-07-1992 |
| JP 6049119                             | A  | 22-02-1994       |  | NONE   |  |  |
| JP 2173105                             | A2 | 04-07-1990       |  | JP 2005091 C<br>JP 2173105 A<br>JP 7033407 B   |  | 11-01-1996<br>04-07-1990<br>12-04-1995   |
| EP 0171200                             | A  | 12-02-1986       |  | JP 1927368 C<br>JP 6055780 B<br>JP 61021109 A<br>AU 582169 B2<br>AU 4467985 A<br>CA 1248511 A1<br>DE 3576508 D1<br>EP 0171200 A2<br>US 4727049 A   |  | 25-04-1995<br>27-07-1994<br>29-01-1986<br>16-03-1989<br>16-01-1986<br>10-01-1989<br>19-04-1990<br>12-02-1986<br>23-02-1988   |
| EP 0173472                             | A  | 05-03-1986       |  | JP 1927370 C<br>JP 6055782 B<br>JP 61037802 A<br>AU 582177 B2<br>AU 4562285 A<br>CA 1248932 A1<br>DE 3580951 D1<br>EP 0173472 A2<br>US 4613579 A<br>US 4959427 A   |  | 25-04-1995<br>27-07-1994<br>22-02-1986<br>16-03-1989<br>06-02-1986<br>17-01-1989<br>31-01-1991<br>05-03-1986<br>23-09-1986<br>25-09-1990   |
| EP 0208524                             | A  | 14-01-1987       |  | JP 1984583 C   |  | 25-10-1995   |

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/EP2004/051914

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|--|------------------|-------------------------|------------------|
| EP 0208524                             | A                | JP 7021018 B            | 08-03-1995       |
|  |                  | JP 62007706 A           | 14-01-1987       |
|  |                  | AU 5975186 A            | 08-01-1987       |
|  |                  | CA 1288758 C            | 10-09-1991       |
|  |                  | DE 3671234 D1           | 21-06-1990       |
|  |                  | EP 0208524 A1           | 14-01-1987       |
|  |                  | US 4693990 A            | 15-09-1987       |